What is claimed is:

1. A method of adding metal to fused silica glass comprising the steps of:

providing a silicon-containing gas stream capable of being converted through thermal decomposition with oxidation or flame hydrolysis to silica;

flowing a second gas stream over a powdered, organometallic precursor and sublimating the precursor to saturate the gas with the organometallic precursor and to provide a metal dopant-containing gas stream;

mixing the silicon-containing gas stream and the metal dopant-containing gas stream;

flowing the mixed gas streams into the flame of a combustion burner to form amorphous particles of metal doped fused silica;

depositing the amorphous particles onto a support; and

consolidating the deposit of amorphous particles into a transparent glass body containing less than 100 parts per million of the metal.

2. The method of claim 1, further comprising the step of heating the second gas stream to a first temperature, heating the precursor to a second temperature to sublimate the precursor, and maintaining the temperature of the saturated, metal dopant-containing gas stream at a third temperature

3. The method of claim 1, wherein the precursor is an organometallic chelate.

4. The method of claim 3, wherein the precursor is a nonhydrolyzable organometallic chelate.

5. The method of claim 1, wherein the metal dopant level in the fused silica member is controlled below 900 parts per billion.

6. The method of claim 3, wherein the organometallic chelate includes aluminum.

7. The method of claim 6, wherein the organometallic chelate includes aluminum acetylacetonate.

8. The method of claim 6, wherein aluminum is metal doped into the fused silica optical member between 50 ppb and 900 ppb.

9. The method of claim 7, wherein the first temperature is between 100° C to 160° C, the second temperature is between 0° C and 10° C below the first temperature, and the third temperature is greater than 175° C.

10. The method of claim 1, further comprising the step of cooling the consolidated glass body from a temperature of greater than 1800° C to a temperature less than 1200° C over a time period greater than four hours.

11. A method of manufacturing a fused silica optical article comprising:

providing a gas stream containing a silicon-containing compound in vapor form capable of being converted through thermal decomposition with oxidation or flame hydrolysis to silica;

adding a metal to the gas stream in a manner such that the amount of the metal in the fused silica optical member can be controlled to a level as low as 50 parts per billion;

flowing the gas stream into the flame of a combustion burner to form amorphous particles of doped fused silica;

depositing the amorphous particles onto a support; and

consolidating the deposit of amorphous particles into a transparent glass body.

12. The method of claim 11, wherein the step of adding the metal to the gas stream includes sublimating a metal containing precursor.

13. The method of claim 12, wherein the precursor includes an organometallic chelate.

14. The method of claim 13, wherein the precursor includes aluminum acetylacetonate.

15. The method of claim 11, further including the step of cooling the consolidated glass body from a temperature of greater than 1800° C to a temperature less than 1200° C over a time period greater than four hours.

16. A method of manufacturing fused silica glass comprising the steps of:

providing a gas stream containing a silicon-containing compound in vapor form capable of being converted through thermal decomposition with oxidation or flame hydrolysis to silica;

flowing the gas stream into the flame of multiple combustion burners to form amorphous particles of fused silica;

depositing the amorphous particles onto a support;

consolidating the deposit of amorphous particles into a transparent glass body;

adding aluminum metal to the glass body; and

cooling the consolidated glass body from a temperature of greater than 1800° C to a temperature less than 1200° C over a time period greater than four hours.

17. An apparatus for adding metals into a fused silica glass article comprising:

a heated precursor chamber for holding a powdered metallic precursor;

a heated stream of carrier gas in fluid communication with the precursor chamber, wherein the carrier gas is passed through the precursor chamber to provide a mixture of carrier gas and precursor; and

a delivery line for delivering the mixture of carrier gas and precursor to a gas stream containing a silicon-containing compound in vapor form capable of being converted through thermal decomposition with oxidation or flame hydrolysis to silica.

18. The apparatus of claim 17, wherein the precursor chamber includes a screen for containing the precursor and for allowing gas to pass through the precursor chamber.

19. The apparatus of claim 18, wherein the apparatus is capable of controlling the amount of metal added into the fused silica at a level as low as 50 parts per billion.

20. The apparatus of claim 17, further comprising a plurality of combustion burners in fluid communication with the silicon containing gas stream.